PaintStar

Paintblock filter segments

HÖCKER® POLYTECHNIK

Always one idea ahead

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Paintblock filtration

The Paintblock combines a pre-filter and a post-filter in one. In several layers of various non-flammable paper with different openings and, consequently, increasing filtration efficiencies, the paint mist separation is up to 99.5%. The structure is progressive and the medium itself retains the paint. This effectively prevents any formation of a filter cake on its top surface. The effective filter surface to face ratio can be up to 10:1.

The patent pending structure as well as the registered design pending spacers ensure that the paint mist does not flow through the Paintblock without being filtered.

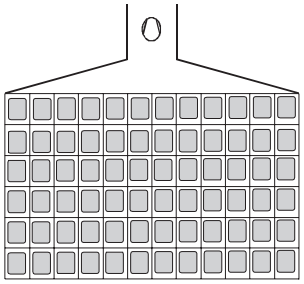
A variety of media can be installed into the Paintblock to suit best any application. This allows adaptation of the Paintblock to most different applications. Special designs without any loss in filtration efficiency are available as well.

The easiest way to use Paintblocks - Höckers PaintStar system

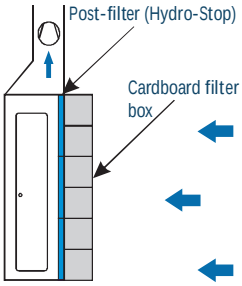
How to retrofit and how many to save?

Step 1: Taking of the existing situation

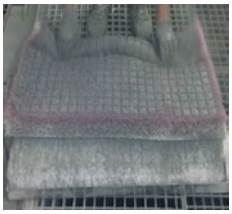
Nominal air flow:	40,000 m³/h
Effective air flow:	24,040 m³/h
Number of cardboard boxes:	72 pcs
Number of Hydro-Stop filters:	24 m²
Changing interval for cardboard boxes:	28 pcs every 4 weeks
	72 pcs every 8 weeks
Changing interval for post- filters:	once per week
Total consumption in 52 weeks	
	Cardboard filter boxes: 832 pcs
Post-filter medium:	1,248 m²



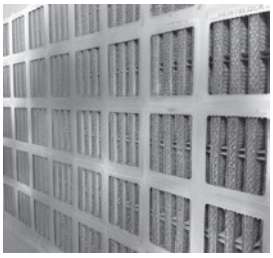
Front view



Side view



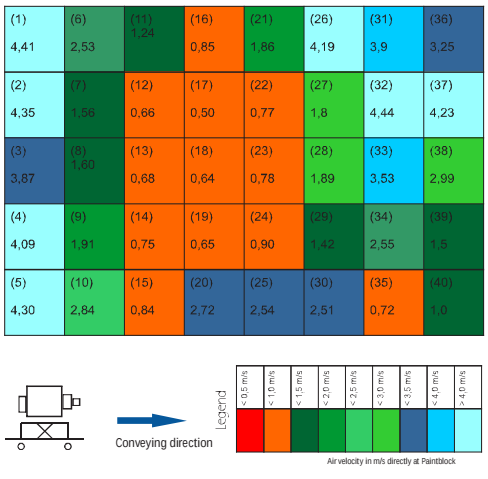
Step 2: Conversion to Paintblock



Prior to a conversion the application and the overspray to be separated are subject to examination. On the basis of the resulting parameters, the appropriate Paintblock will be selected. In the present case the required amount of air could be realized with less Paintblocks - without any loss in performance. The number of filters has been reduced from 72 to 40 pieces, which corresponds to a reduction to 56 % of the separators used before. Due to the nominal air flow of 2,000 m³/h per m² Paintblock at an initial resistance of only 9 Pa it could be ensured that the system still has provided the required amount of exhaust air (maximum possible air flow rate 6,000 m³/h per m²) despite the reduction. The equipment manufacturer proved this amount of air independently by corresponding measurements.

The rate of airflow after the conversion was 36,787 m³/h. Thus, the exhaust volume flow was increased by 53 %.

Step 3: Finding of hot spots



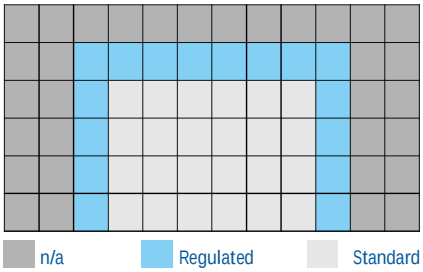
As a rule, the overspray load on the extractor walls is higher at the points where application of paint takes place. Consequently, the volume flow through the different filters varies. In the beginning exhaustion on the so-called hot spots (the Paintblocks directly placed in the range of spraying, highlighted orange) is still uniform; however, after a time this leads to a reduction in the amount of air. At the same time the volume flow through Paintblocks installed in peripheral zones is increasing. Recurring measurements are required to clearly identify these. Having found the hot spots, adaptation measures are developed and proposed to the operating party in writing

Here, also the employees working in the paint booth are asked about their wishes and experiences to implement those and to develop optimum exhaustion at the workplace.

How to retrofit and how many to save?

Step 4: Optimization

To keep the exhaust performance of Paintblocks constant over the entire service life, the Paintblocks highlighted blue have to be „slowed down“. This is achieved without any expensive conversions; instead special sheets are installed into the mounting frame - you do not even need any tools! The Paintblocks are mounted in front of them.



The sheets are designed so as to meet the requirements. This allows individual adaptation to every equipment.

Step 5: Filter change interval

To ensure that production runs smoothly, the production processes and any existing cleaning schedules are taken into account when defining the intervals to change Paintblocks. Maintaining process reliability and protection of resources gets top priority. The operating party gets a recommendation including precise schedules when to change the Paintblocks. The optimum change interval resulting for the equipment in question has been 4 Paintblocks per week at the hot spots (blue).

1	6	11	16	21	26	31	36
2	7	12	17	22	27	32	37
3	8	13	18	23	28	33	38
4	9	14	19	24	29	34	39
5	10	15	20	25	30	35	40

Here, one starts with the bottom row (15, 20, 25, 30) every week followed by the next row up (14, 19, 24, 29, etc.). Thus, each Paintblock in the zone of hot spots is changed every 4 weeks on average.

This ensures that this zone always provides one row of fresh Paintblocks per week. The Paintblocks in the peripheral zones (gray) are to be replaced every 2 weeks - one after the other. Thus, the change interval here is 10 weeks.

Step 6: Economic analysis	**Cardboard filter box**	**Paintblock**	**Differenz**
Effective flow:	24.040 m³/h	36.787 m³/ h	+ 53 %
Number of cardboard filter boxes / Paintblocks	72 pcs	40 pcs	- 44 %
Hydro-Stop Filter p.a.	1.248 m²	n/a	- 100 %
Price p.m² 2,80 Euro	3.494,40 Euro	n/a	- 100 %
Consumption p.a.	832 pcs	338 pcs	- 59 %
Price per cardboard filter box / Paintblock	20,00 Euro	49,00 Euro	+ 245 %
Costs cardboard filter box / Paintblock p.a	16.640,00 Euro	16.562,00 Euro	- 0,5 %
Costs / exchange at 2,00 Euro / piece	1.664,00 Euro	676,00 Euro	- 59 %
Diposal costs 2,00 Euro / piece	1.664,00 E uro	676,00 Euro	- 59 %
Costs for exchange Hydrostop			
Working hours / week 5 hours à 18,00 Euro x 52 weeks	4.680,00 Euro	n/a	- 100 %
Diposal per m² 1,0 Euro	1.248,00 Euro	n/a	- 100 %
Assembly costs for cardboard filter box 0,75 Euro	624,00 Euro	n/a	- 100 %
Total:	30.014,40 Euro	17.914,00 Euro	- 40 %
		Savings in Euro	**12.100,40 Euro**

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